

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: Pope et al.
Title: Prosthetic Hip Joint Having A Polycrystalline Diamond Articulation
Surface and A Plurality of Substrate Layers
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Assistant Commissioner for Patents
Washington, DC 20231

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CLAIM FOR PRIORITY:

This patent application is a continuation-in-part of United States Patent Application Serial No. 09/457,226 filed on December 8, 1999, now abandoned, which is a continuation of United States Patent Application Serial No. 08/844,395 filed on April 18, 1997, now United States Patent No. 6,010,633, which is a continuation of United States Patent Application Serial No. 08/631,877, filed on April 16, 1996, now United States Patent No. 5,645,601, which is a continuation of United States Patent Application Serial No. 08/289,696 filed on August 12, 1994, now abandoned, and priority is claimed to each of them.

I. Background of the Invention.**A. Field of the Invention**

Various embodiments of the invention relate to superhard surfaces and components of various compositions and shapes, methods for making those superhard surfaces and components, and products, which include those superhard surfaces and components. Such products include biomedical devices such as prosthetic joints and other devices. More specifically, some preferred embodiments of the invention relate to diamond and polycrystalline diamond bearing surfaces and prosthetic joints that include diamond and polycrystalline diamond bearing surfaces. Some preferred embodiments of the invention utilize a polycrystalline diamond compact ("PDC") to provide a very strong, low friction, long-wearing and biocompatible bearing surface in a prosthetic joint. Any bearing surface, including bearing surfaces outside the field of prosthetic joints, which experience wear and require strength and durability will benefit from embodiments of the invention.

B. Description of Related Art

This section will discuss art related to prosthetic joint bearing surfaces. Artificial joint replacement has become a widely accepted successful medical practice in the treatment of arthritic or deformed joints. Hundreds of thousands of joint replacement procedures are performed every year. Prosthetic hip and knee replacement comprise the vast majority of these procedures, however many other joints are also treated as well including, but not limited to, the shoulder, elbow, wrist, ankle, and temporomandibular joints. Additionally, there are other joints, such as the intervertebral disk joint of the spine, which are not commonly replaced with prosthetic joints, but which might be